

**2005**

**Seattle Fire Weather  
Operating Plan**

## **LOCATION**

The National Weather Service Forecast Office in Seattle is located at the NOAA Western Regional Center in northeast Seattle. The address is:

National Weather Service  
7600 Sandpoint Way N.E.  
Seattle, WA 98115-0070

## **HOURS OF OPERATION**

The National Weather Service Office in Seattle is open 24 hours a day, 7 days a week. The fire weather desk will be staffed by an experienced fire weather forecaster normally between the hours of 7:00 a.m. and 5:00 p.m. daily during the fire season - usually late May through October in Western Washington. Staff meteorologists trained in the fire weather forecasting will handle requests for spot forecasts or phone briefings after hours. The exact date for the switch from weekdays only to a seven-days-a-week operation varies each year based on spring weather conditions and user requirements.

Forecast service during the off-season, will be provided by staff meteorologists. This service during the off-season will be available Monday-Friday. Spot forecast requests or phone briefings will be handled by staff meteorologists, trained in the fire weather forecasting, on a 24/7 basis from November through May. Changing from the off-season level of service to the fire-season level of service will be made upon user request.

## **Certified Fire Weather Forecast Staff**

Chris Hill – Meteorologist in Charge  
Ted Buehner – Warning Coordination Meteorologist  
Brent Bower - Service Hydrologist  
Jim Prange – Fire Weather Program Leader/IMET  
Andy Haner– Asst. Fire Weather Program Leader/IMET  
Carl Cerniglia – Fire Weather Forecaster  
Danny Mercer – Fire Weather Forecaster

## **PHONE NUMBERS**

FIRE WEATHER DESK	(206) 526-6088
LEAD FORECASTER	(206) 526-6083
Chris Hill, Meteorologist in Charge	(206) 526-6095 ext 222
Jim Prange, Program Leader	(206) 526-6095 ext 252
Andy Haner, Asst. Program Leader	(206) 526-6095 ext 251

## **E-MAIL**

chris.hill@noaa.gov  
jim.prange@noaa.gov  
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## **INTERNET**

Our Internet home page can be found at:

<http://www.wrh.noaa.gov/sew/>

Click the fire weather link on the main menu to access fire weather products.

Statewide, Internet-based, fire weather briefings will be conducted routinely Monday through Friday at 9:15 a.m. during the fire season. Additional daily, weekend and holiday Internet briefings may be conducted during critical fire weather episodes as coordinated with the land management agencies. Contact this office for the appropriate telephone number and conference ID to participate in the conference calls.

Requests for spot forecasts can be made via our Internet web site at <http://www.wrh.noaa.gov/sew/>. Click the "Fire Weather" link, then "Web-Based Fire SPOT Request" near the top of the page. Completed spot forecasts will be posted to the web server within 30 minutes of the original request. This provides a one-stop-shopping method for requesting and obtaining spot forecasts. The Internet web site is the preferred format for requesting Spot Forecasts. Please notify the NWS Seattle if no spot forecast is posted after 30 minutes.

## **FORECAST DISTRICT**

The Seattle Fire Weather Office has forecast responsibility for most state and federal land in Western Washington. The Portland Fire Weather Office handles the Gifford Pinchot National Forest south of a line from Mt. St. Helens to Mt. Adams to the Oregon border. The Seattle fire weather district is divided into 5 distinct areas or districts for fire weather forecasting. The areas are further divided into 13 separate fire weather zones. Each fire weather zone is comprised of fire weather stations that exhibit similar weather and/or weather changes. However, not all of the fire weather stations report on a regular basis.

## **FORECAST PRODUCTS**

### **1. FIRE WEATHER PLANNING AND LAND MANAGEMENT FORECASTS**

During the "fire season", twice-daily Fire Weather Planning Forecasts are issued by 8:30 AM and 3:30 PM. NFDRS Zone Trend forecasts are issued daily with the afternoon Fire Weather Planning Forecast. Routine Land Management forecasts are

issued daily during the "off-season", from about mid-October to mid- May. Land Management forecasts are available in WIMS and on the Internet by 9:00 AM.

## 2. FIRE WEATHER WATCHES AND RED FLAG WARNINGS

General information about Fire Weather Watches and Red Flag Warnings is included in the main portion of this operating plan. Fire Weather Watches and Red Flag Warnings will be issued during Fire Season when the Energy Release Component, as described by the National Fire Danger Rating System, is equal to or greater than the 90th percentile value in the frequency distribution of historical ERCs, and the following conditions described below are either occurring or forecast to occur within the next 72 hours. The table below shows the 90th percentile ERC values that will be used for each fire weather zone.

### **90th Percentile ERC**

Zone 649:	17
Zone 650, 651, 653, 656, 657	25
Zone 652, 654, 655, 658, 659	31
Zone 661	34
Zone 662	57

### **Strong East Winds and Low Humidity (Westside zones only)**

- Nighttime hours (midnight to 7 am):

Duration: 5 hours

Wind Speed: 20 ft /10 minute average wind greater than or equal to 10 mph

RH: less than or equal to 35%.

- Daytime hours (7 am to midnight):

Duration: 4 hours in an 8 hour block

Wind Speed: 20 ft/10 min average wind greater than 10 mph

RH: less than or equal to 30%, except less than or equal to 25% on the Gifford-Pinchot NF south of the Cowlitz River.

Note: Since many fire weather stations in Western Washington do not show good exposure to strong east winds, a Red Flag Warning during east wind episodes will verify if the above-mentioned wind criteria is reported by at least 3 of the following stations: Ellis Mt., Minot Peak, Greenwater, Lester, Stampede Pass, or

Kosmos Mountain. Historical fire weather records indicate these sites are key indicators of strong east winds and low relative humidity values.

**Strong West Winds and Low Humidity (Eastside zone 662 only)**

Duration: at least 4 hours

Wind Speed: 20 ft /10 minute average wind greater than or equal to 15 mph

RH: less than or equal to 25%.

Stehekin and Camp Four RAWS will be used to verify Red Flag Warnings in zone 662.

The conditions described above should be fairly widespread in both time and space across the fire weather zone - as opposed to an isolated incident or a diurnal occurrence that lasts for only a few hours.

**Lightning**

Dry lightning (LAL 6) occurs when the environment below the cloud base is so dry that passing thunderstorms produce little or no precipitation at the surface. A Fire Weather Watch or Red Flag Warning will be issued for this event when the zone-averaged ERC is in the 90th percentile, or higher, and dry lightning is either expected or already occurring. The activity must be **scattered (25-54% aerial coverage) or greater** within a particular zone, and fewer than two stations in the zone report 0.25" of rainfall from the passing thunderstorms on the west side of the Cascades and 0.20" in zone 662 on the east side of the Cascades.

A Fire Weather Watch or Red Flag Warning will also be issued for the occurrence of scattered or greater lightning activity within a particular zone, either wet or dry, after an extended dry spell when the zone-averaged ERC is in at the 90th percentile or greater.

Each potential Red Flag event will be coordinated with local land management agencies to ensure environmental conditions are sufficiently critical to justify the issuance of a watch or warning.

**3. TRANSPORT AND STABILITY FORECASTS**

Transport and stability forecasts will be appended to every Fire Weather Planning and Land Management forecast issued by Seattle. These forecasts include information on air mass stability, afternoon mixing heights of surface-based air, and free air winds from 3,000 feet to 7,000 feet for the next 48 hours.

#### 4. SPOT FORECASTS

Mission Connection: WFO Seattle will issue spot forecasts in support of wildfire suppression and natural resource management. These forecasts aid the land management and fire control agencies in protecting life and property during wildland fires, hazardous fuels reduction, and rehabilitation and restoration of natural resources. Spot forecasts may also be issued for hazardous materials incidents and other threats to public safety.

Issuance Criteria: Spot forecasts are non-routine products issued at the request of the user. WFO Seattle will provide spot forecast service upon request of any federal, state, tribal, or local official who represents the spot forecast is required to support a wildfire.

For non-wildfire purposes, resources permitting, WFO Seattle will provide spot forecast service under the following circumstances and conditions:

a. Upon request of any federal official who represents that the spot forecast is required under the terms of the Interagency Agreement for Meteorological Services (NWS Instruction 10-406).

b. Upon request of any state, tribal, or local official who represents that the spot forecast is required to carry out their wildland fire management responsibilities in coordination with any federal land management agency participating in the Interagency Agreement for Meteorological Services (NWS Instruction 10-406).

c. Upon request of any public safety official who represents the spot forecast is essential to public safety, e.g. due to the proximity of population centers or critical infrastructure. A “public safety official” is an employee or contract agent of a government agency at any level (federal, state, local, tribal, etc.) charged with protecting the public from hazards including wildland fires of whatever origin and/or other hazards influenced by weather conditions such as hazardous material releases.

WFO Seattle will not provide spot forecasts to private citizens or commercial entities not acting as an agent of a government agency.

Information required by the fire weather forecaster from the requesting agency is found on WS Form D-1. Spot forecasts for wildfire suppression will take precedence over normal office routines.

#### **AGENCIES SERVED**

The Seattle Fire Weather Office serves the following state and federal land management agencies:

United States Forest Service - Olympic National Forest, Mt. Baker-Snoqualmie National Forest, Gifford-Pinchot National Forest and Okanogan National Forest

National Park Service - North Cascades National Park, Olympic National Park, Mt. Rainier National Park and San Juan Islands National Park

Bureau of Indian Affairs - Olympic Peninsula Agency and Puget Sound Agency

Washington Department of Natural Resources -  
Resource Protection Division, Northwest, Olympic, South Puget Sound, and Pacific Cascade regions.

## **FIRE WEATHER ZONE BOUNDARY DESCRIPTIONS**

A detailed map of the fire weather zone boundaries is included at the end of this section.

**Zone 649:** The western boundary of fire weather zone 649 is the Pacific coastline in Clallam, Jefferson, and Grays Harbor counties. The eastern boundary includes all Federal, State and private land within 5 miles of the Pacific coastline in Clallam, Jefferson, and Grays Harbor Counties. It extends south along the eastern border of the Makah Indian Reservation and the east shore of Ozette Lake to the town of Quillayute in Clallam County. In Jefferson County, the eastern boundary crosses US Highway 101 approximately 5 miles east of the Hoh Indian Reservation, then parallels the coast south until crossing US Highway 101 again along the border between Jefferson and Grays Harbor counties 5 miles inland from the coast. The eastern border continues south in Grays Harbor county until it crosses highway 101 at New London and US Highway 12 approximately 5 miles east of Aberdeen. The boundary then turns south, following US Highway 101 to the southern border of Grays Harbor county.

**Zone 650:** Zone 650 includes all State, Federal and private land 5 miles inland from the coast to an elevation of 1500 ft on the western side of the Olympic Mountains in Clallam, Jefferson, and Grays Harbor Counties. The area includes the low elevation portion of the Calawah, Bogachiel, Hoh, Clearwater, Queets, Quinault, and the Humptulips River drainages below 1500 ft. The southern boundary begins where the Humptulips River crosses the southern boundary of Zone 652, stretching southwest along the Humptulips River until it intersects the eastern boundary of zone 649 in Grays Harbor County.

**Zone 651:** The western boundary of zone 651 follows the Humptulips River and the eastern boundary of zone 649 in Grays Harbor County. The 1,500 foot contour interval on the south side of the Olympic Mountains forms the northern border of zone 651. The county line between Grays Harbor County and Pacific County forms the southern boundary. The eastern border follows the West Fork of the Satsop River south across US Highway 12 near the town of Satsop, continuing south along the west side of the Lower Chehalis State Forest. Zone 651 is mostly State and Private land, but also includes Forest Service land below 1500 ft in the Humptulips and Wynochee River drainages.

**Zone 652:** Zone 652 includes US Forest Service, National Park Service, and Washington State lands at or above 1500 feet located in the western half of Clallam and Jefferson counties, and the far northeast corner of Grays Harbor county. The area includes the Pacific Ranger District office on the west and southwest side of the Olympic National Forest. Zone 652 is the wetter, west side of the Olympic Peninsula that reflects a greater influence of marine air in both weather and fire danger. The area includes all private, federal and state lands at or above 1,500 feet drained by the Calawah, Sitkum, Bogachiel, Hoh, Clearwater, Queets, Quinault, and Humptulips rivers in Clallam, Jefferson, and Grays Harbor counties.

**Zone 661:** Zone 661 includes private, federal and state land at or above 1,500 feet on the east side of the Olympic Peninsula. The area typically exhibits higher fire danger than zone 652, due to less rainfall, less influence of marine air, and a higher occurrence of lightning activity. The area includes lands at or above 1,500 feet drained by the Wynoochee, Satsop, North and South Fork Skokomish, Hamma Hamma, Duckabush, Dosewallips, Quilcene, Dungeness, and the Elwha rivers.

**Zone 653:** Zone 653 includes all lands below 1500 ft msl on the north side of the Olympic Peninsula from the town of Sekiu on the west to a point just south of Discovery Bay on the east. The boundary extends southeast across Admiralty Inlet, east across the northern tip of the Kitsap Peninsula and Puget Sound to Interstate 5 along the border between King and Snohomish Counties. The eastern boundary of zone 653 parallels I-5 north through Snohomish, Skagit and Whatcom counties to the Canadian border.

**Zone 654:** Zone 654 includes lowland areas below 1,500 feet near the central and southern portion of Puget Sound and Hood Canal. The eastern boundary parallels I-5 south through King and Pierce counties, west through Olympia in Thurston County, then northwest along U.S. Highway 101 to city of Shelton. The boundary continues northwest from Shelton to the southeast corner of the Olympic National Forest in Mason County, then follows the 1500 ft contour northeast along the Hood Canal in Mason and Jefferson Counties.

**Zone 655:** The eastern border of zone 655 follows the West Fork of the Satsop River south across US Highway 12 near the town of Satsop, continuing south along the west side of the Lower Chehalis State Forest to the town of Brooklyn in northeast corner of Pacific County. From Brooklyn the boundary extends southeast to the town of Pe El in the eastern portion of Lewis County and then continues southeast to the town of Vader in Lewis County. The border then runs east along the southern border of Lewis County to the 1,500 foot contour along the west slopes of the Cascades. The boundary follows the contour on the north and south sides of the Cowlitz river valley. It then continues north along the 1,500 foot contour to the boundary between Thurston and Lewis Counties. The zone boundary then extends east to the intersection of Pierce, Thurston, and Lewis Counties. It then follows the Pierce/Thurston County boundary northwest to the intersection of I-5 and then west along I-5 to US Highway 101. Zone 655 then extends northwest paralleling 101 to the southeast corner of the Olympic National Forest in

Mason County. The area includes the Capitol State Forest and the Lower Chehalis State Forest.

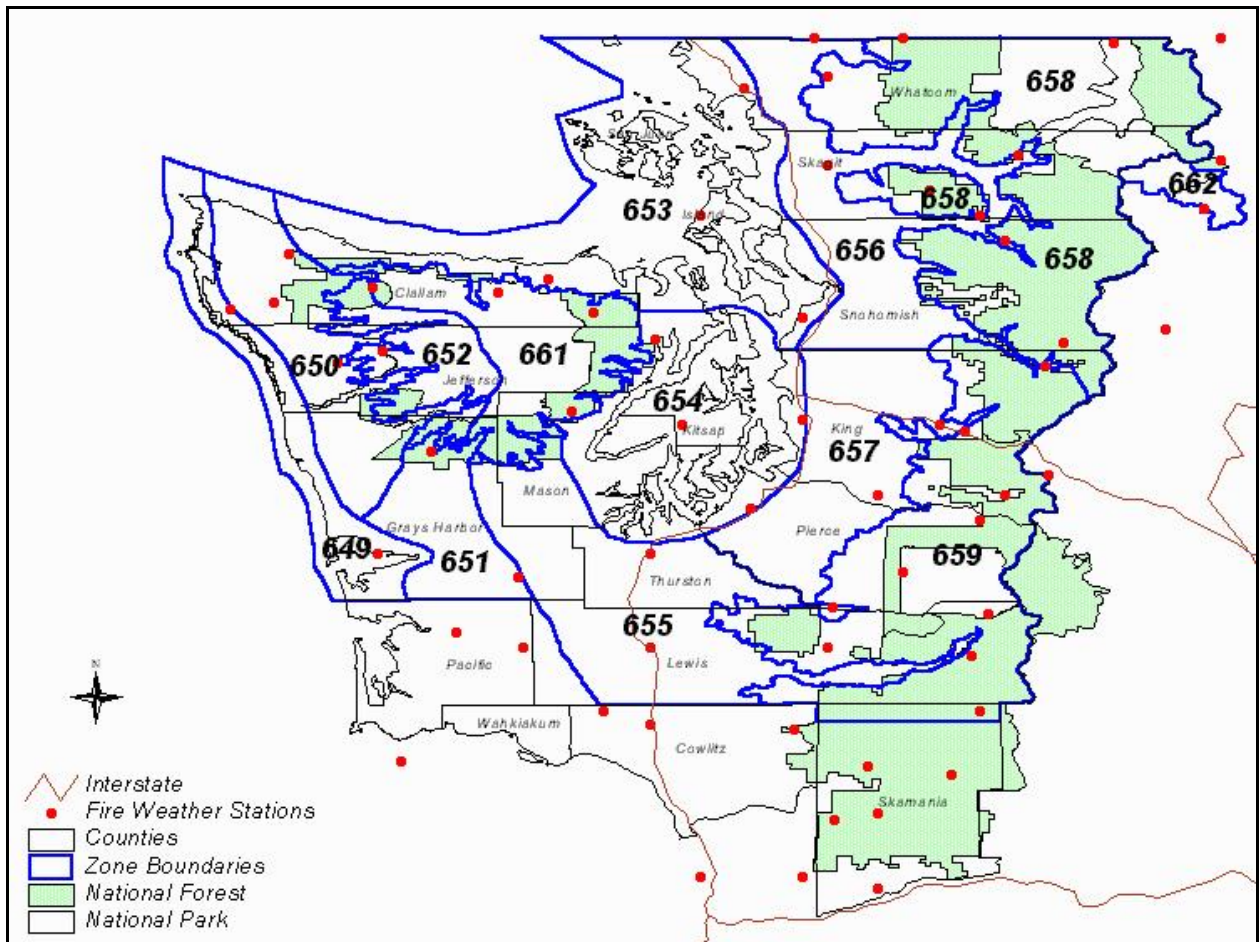
**Zone 656:** Zone 656 includes all State and Private lands in Whatcom, Skagit, and Snohomish Counties east of I-5 below an elevation of 1500 feet. This includes the following river drainages...North, Middle and South Forks of the Nooksack River, Skagit River from town of Sedro Woolley to the town of Marblemount (including Lake Shannon and Baker Lakes in the Baker River drainage), Sauk River from the confluence of the Sauk and Skagit Rivers south along SR 530 to the town of Darrington, the Stillaguamish River from Darrington to the town of Arlington, and the Skykomish River along US Highway 2 from the town of Monroe to six miles east of the town of Skykomish.

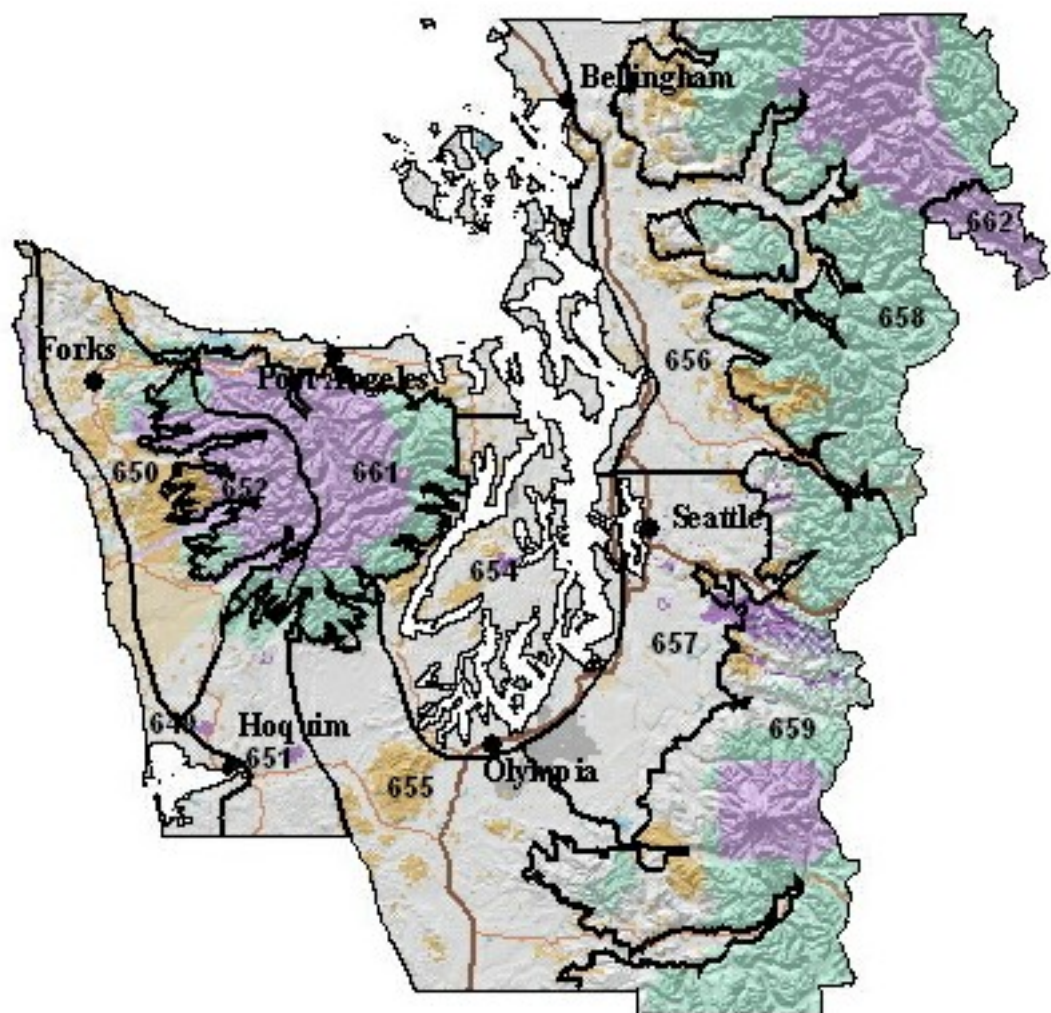
**Zone 657:** Zone 657 includes land below 1500 ft east of I-5 in King and Pierce Counties. The southern border of the zone follows the border between Pierce and Thurston Counties. This area includes the following river valleys below 1500 ft that reach into the Cascade Mountains...North, Middle and South Fork of the Snoqualmie River, White River including Mud Mountain Lake, Puyallup River, and the Nisqually River to the town of Ashford.

**Zone 658:** Zone 658 includes Federal, State and Private lands at or above 1500 feet in Whatcom, Skagit, Snohomish, and the northeast portion of King County in the Skykomish River drainage. The area includes the North Cascades National Park and the Ross Lake National Recreational Area, and the Mt. Baker, Darrington, and Skykomish Ranger Districts of the Mt. Baker-Snoqualmie National Forest. The eastern boundary is the Cascade crest.

**Zone 659:** Zone 659 includes Federal, State and Private lands at or above 1500 ft in King, Pierce, and Lewis Counties, and the extreme northern portion of Skamania County. This includes the North Bend and White River Ranger Districts of the Mt. Baker-Snoqualmie National Forest, Mt. Rainier National Park, and the Cowlitz Valley Ranger District of the Gifford Pinchot National Forest. The eastern boundary of this zone runs along the crest of the Cascades.

**Zone 662:** Zone 662 includes federal lands managed by the North Cascades National Park east of the Cascade crest in Chelan county. This area includes the Lake Chelan National Recreational Area and the North Cascades National Park South Unit.





## 2005 NWS Seattle NFDRS Station Index

ZONE	NAME	Type	NUMBER	OWNER	LAT	LON	ELEV
650	Ellis Mountain	R	450130	DNR	48.16	-124.32	2671
650	Quilcene	R	450207	USFS	47.57	-124.15	50
651	Minot Lookout	R	450306	DNR	46.88	-123.42	1768
652	Humptulips	R	450312	USFS	47.37	-123.47	2400
652	Tom Creek	R	450121	USFS	48.02	-123.92	2400
652	Owl Mountain	R	450211	DNR	47.77	-123.97	3398
653	Blue Mountain	R	450127	DNR	48.06	-123.27	750
655	Chehalis	R	451103	DNR	46.60	-122.90	245
657	Enumclaw	R	451702	DNR	47.20	-122.00	742
658	Marblemount	R	451504	NPS	48.54	-121.45	357
658	Sumas	R	451415	DNR	48.91	-122.23	3200
658	Kidney	R	451409	USFS	49.00	-121.90	3000
658	Finney	R	451509	USFS	48.40	-121.80	1900
658	Johnson	R	451611	USFS	47.80	-121.27	2000
658	Gold Mountain	R	451613	USFS	48.20	-121.50	3400
659	Kosmos	R	451105	DNR	46.60	-122.20	2100
659	Greenwater	R	451718	DNR	47.16	-121.61	2400
659	Ohanepcosh	R	451119	NPS	46.73	-121.57	1925
659	Hagar	R	451115	USFS	46.57	-121.63	3600
659	Lester	R	451705	USFS	47.20	-121.50	1615
659	Orr Creek	R	451919	USFS	46.35	-121.60	3000
661	Cougar	R	450117	USFS	47.92	-123.12	3000
661	Jefferson	R	450911	USFS	47.55	-123.17	2200
661	Hurricane Ridge	R	450124	NPS	47.97	-123.50	5280
662	Stehekin	R	452121	NPS	48.35	-120.72	1230